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ABSTRACT

The purpose of this study was to examine satisfaction with the supervisory relationship, satisfaction with graduate education, reasons why both students and supervisors decide to work together, positive role modeling, and the decision to pursue an academic career. Other variables examined in the study included: gender, age, department/faculty, and student time to completion. Surveys were completed by 121 graduate students and 43 of their supervisors, resulting in 43 student/supervisor dyads. Supervisors reported greater satisfaction with the supervisory relationship than did students. Student satisfaction with the adviser was positively correlated with their satisfaction with graduate education. Point-biserial correlations and Pearson correlations revealed a significant positive relationship between overall satisfaction with the supervisory relationship and positive supervisor role modeling. However, the analyses failed to find significant correlations between the decision to pursue an academic career and overall satisfaction with the supervisory relationship and the decision to pursue an academic career and role modeling. A series of paired samples t-tests revealed significant differences between why students and supervisors decided to work together. Students selected "personality" as the most important reason for working with their supervisors, but supervisors selected "common research interest." (Contains 11 tables and 27 references.) (Author/SLD)

Running Head: Graduate Student Supervision

Dyad Interdependence: An Examination of the Student/Supervisor Relationship in Graduate Education

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Dyad Interdependence: An Examination of the Student/Supervisor Relationship in Graduate Education

Abstract

Increasing concerns in graduate schools about the quality of graduate programs, completion rates and their subsequent effect on the supply of new scholars (Holdaway, Deblois & Winchester, 1995) have led researchers to examine the quality and nature of the supervisory relationship. The purpose of this study was to examine satisfaction with the supervisory relationship, satisfaction with graduate education, reasons why both students and supervisors decide to work together, positive role modeling and the decision to pursue an academic career. Other variables examined in the study included: gender, age, department/faculty, and student time to completion. Surveys were completed by 121 graduate students and 43 of their supervisors (hence 43 student/supervisor dyads).

Supervisors reported greater satisfaction with the supervisory relationship than did students. Student satisfaction with the supervisor relationship was positively correlated with their satisfaction with graduate education. Point-biserial Correlations and Pearson Correlations revealed a significant positive relationship between overall satisfaction with the supervisory relationship and positive supervisor role modeling, however, the analyses failed to find significant correlations between: the decision to pursue an academic career and overall satisfaction with the supervisory relationship; the decision to pursue an academic career and role modeling. A series of paired samples t-tests revealed significant differences between why students and supervisors decided to work together. Students selected 'personality' as the most important reason for working with their supervisors, however supervisors selected 'common research interest'.

Introduction

There has been increasing concern in North American graduate schools about PhD completion rates and the subsequent effect they have on the supply of new scholars for academia (Hill, Acker, and Black, 1994). In addition to completion rates, the overall quality of graduate programs has also emerged as an area of concern (Holdaway, Deblois & Winchester, 1995). Although several factors can impact program quality and completion, one that is becoming more prevalent in the research is the quality and nature of the relationship between supervisor and graduate student (Hill, Acker & Black, 1994; Moses, 1992; Powles, 1993). For example, Lovitts and Nelson (2000) found that the single most important factor in student decisions to continue or withdraw from graduate school was their level of satisfaction with the supervision they received. Understanding both the nature of the relationship, and the roles and behaviors of both the supervisor and the student within the relationship are therefore critical in attempting to increase completion rates and increase the supply of future academics.

The purpose of the present study was to examine satisfaction with the supervisory relationship, satisfaction with graduate education, reasons why both students and supervisors decide to work together, positive role modeling and the decision to pursue an academic career.

Theoretical Framework

Graduate education, an essential component of universities, refers to the central unit, which has responsibility for the overall administration of graduate programs. The graduate programs refer to master's and doctoral degrees often directed at one of two careers. The first is the preparation of future academics and researchers. The second is either professional qualifications or professional upgrading, mainly through course-work master's degrees (e.g., MEd, MBA, MSW or MLS) (Holdaway, Deblois, & Winchester, 1995).

Generally speaking, graduate education is said to have three major characteristics. First, it is advanced, meaning that all students have prior post-secondary education where they have been exposed to new ideas, critical thinking, analytical processes, and communication skills. Second, it is focused on a discipline, a profession, a problem, or an issue. Finally, graduate education is scholarly, with an evolving knowledge base and the generation of new and original ideas and contributions. (LaPidus, 1989). With these characteristics, come two predominant goals. The first is to prepare people to practice as independent professionals, and the second is to produce research that is linked to the intellectual, social, and economic development of society (LaPidus, 1989). Keeping these important goals in mind, and the contribution and impact graduate programs can have on national economies (Holdaway, Deblois, & Winchester, 1995), procedures and practices within graduate education are constantly being examined to identify potential problem areas (Smith, 1991).

In recent years, problem areas that have been identified in graduate education relate to completion times, completion percentages, quality of students and quality of programs (Holdaway, Deblois, & Winchester, 1994; Canadian Association for Graduate Studies, 1992; Royal Society of Canada, 1991; Smith, 1991). Such problem areas concern university administrators for two reasons. First, graduate students increase research productivity, which can lead to greater external funding. Increased productivity can also influence the overall reputation of the university (Milem, Berger & Dey, 2000) which in turn encourages further enrolment. If completion rates are low and the quality of a graduate program is poor, students are likely to choose an alternate institution.

The second concern is for the future supply of new scholars and teachers in academia (Hill, Acker, & Black, 1994). Canadian universities will see nearly 50% of full-time faculty and

about 40% of college faculty retiring in the next 10 years (Statistics Canada, February 2000). Again, if completion rates are low and attrition high, there may not be sufficient PhD graduates pursuing academic careers to replace those that are retiring.

Although there are several factors that can have a potential impact on completion rates (e.g. health, finances, family, motivation), reports have indicated that constant supportive supervision is a major key to successful graduate program completion (Holdaway, 1991; Holdaway, Deblois, & Winchester, 1994). Supervision, therefore, plays a critical role in achieving one of the goals of graduate education, which is to introduce and prepare students for a scholarly career (Katz, 1976; Powles, 1988). Given the importance of supervision in attaining the academic goal of graduate education, it seems reasonable to investigate it in greater detail.

Conceptually, there is ambiguity over what characterizes the definition of graduate student supervision (Donald, Saroyan, & Denison, 1995). For some researchers, it is seen simply as a mechanically narrow process of ensuring that deadlines are established and students complete the required tasks to graduate. For others, supervision is believed to be a more complex process, whereby students are not only guided through the mechanical details of the program but also helped in becoming members of the academic community (Donald, Saroyan, & Denison, 1995).

In general, the role of supervision in graduate schools is described as "the ability to select problems, to stimulate and enthuse students, and to provide a steady stream of ideas", in addition to "the mechanics of ensuring that the student makes steady progress" (Council of Graduate Schools, 1990, p.1).

The supervisory relationship itself has received little attention in the literature on supervision (Kaiser, 1997). What has been examined however, shows that the nature of the

relationship can have a profound influence on a student, impacting such things as quality of work (Kaiser, 1997), self-esteem (Hodgson & Simoni, 1995), and overall success (Donald, Saroyan, & Denison, 1995).

Although many supervisory characteristics have been identified as important with respect to supervision (Hill, Acker & Black, 1994; Moses, 1992), researchers have identified positive role modeling as very important (Morgan, 1993). There is however some confusion in the literature about role modeling in student-supervisory relationships and how it relates to effective supervision. According to Morgan (1993) role modeling should include modeling research skills plus teaching skills if graduate students aspire for academic positions. Modeling involves an "advanced person engaging in the desired behaviors, so that a younger, less experienced person can mould their behaviour in a similar fashion" (Morgan, 1993, p. 4). In other words, the supervisor demonstrates how the job is done. The problem with modeling, though, is that the less experienced person simply observes the end product without experiencing the factors involved in the behaviors they have seen. Furthermore, supervision often only involves role modeling in terms of research skills. There are substantial consequences to faculty for good research, such as promotions, pay raises, and fame; therefore these skills become the focus of their career (Cesa & Fraser, 1989). The benefits for good teaching are less clear and thus emphasis on role modeling in the teaching domain is lessened.

In an attempt to further understand student-supervisory relationships, researchers have also focused on demographic variables such as age, gender, and Faculty or Department.

Age

Powles (1988) found that students under 30 were more dissatisfied than students over 30 in all aspects of guidance and supervision. With respect to age of supervisor, Yerushalmi (1993)

wrote that as supervisors approach middle-age, they may experience stagnation, depression, cynicism and pessimism, which can have a negative effect on supervision. Supervisors may feel threatened in the presence of younger students aspiring for their jobs.

Gender

Gender issues have become increasingly important in the research on supervision. Women report more barriers to successful supervisory relationships than do men (Burke & McKeen, 1996). Male students perceived better relationships with their supervisors, regardless of the gender of the supervisor, than female students did. In addition, male supervisors also perceived better relationships with students, regardless of student gender, than did female supervisors (Worthington & Stern, 1985).

Department/Faculty

Research has indicated differences in supervisory practice across the various disciplines in graduate education (Donald, Saroyan, & Denison, 1995; Moses, 1992). While most disciplines agree on the need for knowledge of research area and availability for effective supervision, discrepancies occur in the area of providing feedback and being sensitive to student needs (Donald, Saroyan, & Denison, 1995; Powles, 1993). To date, research examining the differences in perceived supervisory effectiveness and the importance students place on the different characteristics of supervision have only been examined in Humanities (Hodgson & Simoni, 1995), Social Sciences (Burgess, Pole, & Hockey, 1994), Social Work (Collins, 1993) and Clinical/Counseling Psychology (Kaiser, 1997). There does not appear to be any research examining the differences in supervision across all disciplines in graduate school, especially in the area of Fine Arts, Engineering, Math and Statistics.

This paucity of research along with conflicting interpretations of effective supervision, concerns about completion rates and concerns about the future supply of university professors, make it important to examine, understand and promote effective supervisory practices within university graduate programs. The purpose of the present study was to further examine these issues by addressing the following questions:

1) Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?
2) Is there a significant relationship between the overall satisfaction with the supervisory relationship and the satisfaction with graduate education?
3) Is there a significant relationship between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?
4) Are there significant differences between demographic variables (i.e., gender, age, Faculty) and the overall satisfaction with the supervisory relationship for both students and supervisors?
5) Is there a significant difference between why students and supervisors decide to work together?

Methodology

Participants

This study was conducted at a large research university offering graduate (masters and doctoral) degrees in 47 different programs. Participants consisted of 121 graduate students and 43 student/supervisor dyads. The students had recently completed a masters (n = 95) or doctoral degree (n = 26), therefore ensuring they had experienced all stages of the supervisory relationship. While it was the goal of the study to sample the perceptions of both students and supervisors, the *Graduate Supervisory Relationship Scale - Form A and Form B* were designed to sample specific student and supervisor dyad relationships. The supervisors were therefore

selected based on whether one or more of their students had agreed to participate. In total 121 survey packages were sent to supervisors with a total of 43 being returned.

Both male (n = 48) and female (n = 73) students ranging in age from 26 to 50 participated in the study, with 48% (n = 58) falling between the ages of 26 and 30. The supervisors (28 males and 15 females) ranged in age from 35 to 64, with the majority (51%, n = 22) being 46 to 55. Most supervisors were at a rank of 'full professor' (58%, n = 25), followed by 'associate professor' (33%, n = 14). The remaining four supervisors were at the 'assistant' level.

Procedure

The names of graduate students were compiled from a posted convocation list. The researcher attended convocation and distributed survey packages (containing the *Graduate Supervisory Relationship Scale - Form B)* to all graduate students in attendance. Additional packages were sent by campus mail to students who had not attended the graduation ceremony. A total of 305 packages were distributed with 121 being returned.

All returned surveys from the students were assigned a number for analysis purposes and for matching supervisors with students. The names of the supervisors were obtained from the graduate secretaries in the applicable departments. Supervisor surveys *(Graduate Supervisory Relationship Scale - Form A)* were number coded to match the student they were referring to when completing the survey. In total, 121 supervisor packages were distributed; one for each of the students who had returned completed surveys.

Data Analysis

For all statistical tests, the level of significance was set at $p \leq .05$. Table 1.0 presents a summary of the analysis for each of the research questions examined in the study.

Table 1.0 Analysis Summary According to Research Questions

Research Question	Analysis
1) Is there a significant difference between the overall satisfaction with the supervisory relationship for both students and supervisors?	Paired samples t-test
2) Is there a significant relationship between the overall satisfaction with the supervisory relationship and the satisfaction with graduate education?	Pearson Correlation
3) Is there a significant relationship between overall satisfaction with the supervisory relationship, positive role modeling and the decision to pursue an academic career?	Point-biserial Correlations and Pearson Correlations
4) Are there significant differences between demographic variables (i.e., gender, age, Faculty) and the overall satisfaction with the supervisory relationships for both students and supervisors	Series of 2-tailed t-tests and ANOVA's
5) Is there a significant difference between why students and supervisors decide to work together?	Series of Paired t-tests

Results

Overall Satisfaction with the Supervisory Relationship

Overall satisfaction frequencies and descriptives for the dyad data set (student and supervisor pairs, n = 43) are presented in Table 2.0. Results of a paired samples 2-tailed t-test indicated that overall, supervisors were more satisfied with the supervisory relationship than students were $t(42) = -4.627$, $p = .000$.

Table 2.0 Student and Supervisor Overall Satisfaction with The Supervisory Relationship

Satisfaction Ratings
1 = Very Dissatisfied 2 = Dissatisfied
3 = Neither Satisfied nor Dissatisfied 4 = Satisfied 5 = Very Satisfied

n = 43	Overall Satisfaction					Mean	Standard Deviation
	1 %	2 %	3 %	4 %	5 %		
Students	2.3	14.0	18.6	23.3	41.9	3.88	1.18
Supervisors	0	0	4.7	25.6	69.8	4.65	.57

Satisfaction with Supervision and Satisfaction with Graduate Education

Frequencies and descriptives for student overall satisfaction with the supervisory relationship and satisfaction with graduate education are presented in Table 3.0. A significant positive correlation existed between overall satisfaction with the supervisory relationship and satisfaction with graduate education r = .668, p = .000 (2-tailed).

Table 3.0 Student Overall Satisfaction with The Supervisory Relationship by Satisfaction with Graduate Education

Satisfaction Ratings
1 = Very Dissatisfied 2 = Dissatisfied
3 = Neither Satisfied nor Dissatisfied 4 = Satisfied 5 = Very Satisfied

		Overall Satisfaction with Supervisory Relationship (mean = 3.63, s.d. = 1.27)					**Total**
		1	**2**	**3**	**4**	**5**	
Student Satisfaction with Graduate Education (mean = 3.79, s.d. = 0.82)	**1**						0
	2	5	5	2			12
	3	1	9	8	1		19
	4		8	8	30	26	72
	5		2	1	1	14	18
Total		6	24	19	32	40	121

Satisfaction with Supervision, Positive Role Modeling and Pursuing an Academic Career

Descriptive data for positive role modeling, and the decision to pursue an academic career are presented in Table 4.0

Table 4.0 Positive Role Modeling and Career Choice Distribution

		Yes	**No**
Supervisor is considered a positive role model	**n**	95	26
	%	(78.5)	(21.5)
Student is pursuing an academic career	**n**	54	67
	(%)	(44.6)	(55.4)

A significant positive correlation existed between overall satisfaction with the supervisory relationship and positive supervisor role modeling ($r = .644$, $p = .000$). Table 5.0 presents the distribution data.

Table 5.0 Student Overall Satisfaction with The Supervisory Relationship by Positive Supervisor Role Modeling

Satisfaction Ratings
1 = Very Dissatisfied 2 = Dissatisfied
3 = Neither Satisfied nor Dissatisfied 4 = Satisfied 5 = Very Satisfied

		Overall Satisfaction with Supervisory Relationship (mean = 3.63, s.d. = 1.27)					**Total**
		1	**2**	**3**	**4**	**5**	
Supervisor is considered a positive role model	**No**	6	13	6	1		26
	Yes		11	13	31	40	95
Total		6	24	19	32	40	121

The analysis failed to find significant correlations between:

- the decision to pursue an academic career and overall satisfaction with the supervisory relationship ($r = .146$, $p = .110$) and;
- the decision to pursue an academic career and role modeling ($r = .065$, $p = .479$)
-

Demographics and Satisfaction with Supervision and Graduate Education

1. Gender

No significant differences were found in overall satisfaction with the supervisory relationship or graduate education as a function of student gender, or supervisor gender.

2. Age

No significant differences were found in overall satisfaction with the supervisory relationship or graduate education as a function of student age, or supervisor age.

3. Student Department/Faculty

The following departments/faculties were examined: Humanities, Environmental Design, Education, Engineering, Social Science, Science, Nursing, Social Work, Communication & Culture, Management, Medical Science, and Kinesiology. Table 6.0 presents descriptive data for the 12 faculty groups, while Table 7.0 presents the ANOVA results for overall satisfaction with the supervisory relationship and overall satisfaction with graduate education by faculty.

An LSD post-hoc examination revealed between which groups the differences in satisfaction existed. Satisfaction with overall supervision was significantly greater in Nursing than in: Environmental Design ($p = .002$), Education ($p = .002$), Communication & Culture ($p = .000$), Social Science ($p = .001$), Science ($p = .001$), Engineering ($p = .006$) and Kinesiology ($p = .017$). Overall satisfaction was also significantly greater in Medical Science than in: Environmental Design ($p = .014$), Education ($p = .017$), Communication & Culture ($p = .001$), Social Science ($p = .010$), Science ($p = .070$), and Engineering ($p = .031$).

Satisfaction with graduate education significantly greater in Nursing than in: Environmental Design ($p = .011$), Communication & Culture ($p = .013$), Science ($p = .000$) and Kinesiology ($p = .006$). Finally, satisfaction was significantly greater in Medical Science than in Science ($p = .021$) and Kinesiology ($p = .029$)

4. Supervisor Department/Faculty

No significant differences were found in overall satisfaction with the supervisory relationship as a function of the supervisors faculty group.

Table 6.0 Descriptive Statistics for Characteristics with Significant Differences in Satisfaction by Student Faculty

HU = Humanities
EVD = Environmental Design
ED = Education
SS = Social Science
ENG = Engineering
SC = Science
NU = Nursing
SW = Social Work
CC = Communication & Culture
MG = Management
MS = Medical Science
KN = Kinesiology

Characteristic		HU	EVD	ED	SS	CC	MG	ENG	SC	NU	SW	MS	KN
Overall satisfaction with the supervisory relationship	n	7	8	24	16	2	2	10	20	8	7	7	10
	mean	3.86	3.38	4.00	4.00	3.00	4.00	4.00	3.35	4.38	4.00	4.14	3.50
	sd	.69	.92	.72	.89	1.41	.00	.57	.88	.52	.00	.38	1.06
Overall satisfaction with graduate education	mean	3.86	3.25	3.54	3.38	1.50	4.50	3.50	2.90	5.00	4.57	4.71	3.70
	sd	1.07	1.49	1.38	1.15	.71	.71	.97	1.07	.00	.53	.49	1.42

Table 7.0 ANOVA's of Satisfaction on Characteristics with Significant Differences by Student Faculty

Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Overall satisfaction with the supervisory relationship	Between Groups	14.820	11	1.347	2.259	.016
	Within Groups	65.014	109	.596		
	Total	79.835	120			
Overall satisfaction with graduate education	Between Groups	53.656	11	4.878	3.836	.000
	Within Groups	138.608	109	1.272		
	Total	192.264	120			

5. Student Time to Completion and Satisfaction

Time to completion was examined as a function of degree, to account for the difference in time to complete a doctoral degree compared with a master's degree. Descriptive data are presented in Table 8.0. A series of ANOVA's were performed to determine if differences in satisfaction existed as a function of completion time. No significant differences were found in satisfaction with overall satisfaction with the supervisory relationship or satisfaction with graduate education between the groups.

Table 8.0 Student Degree and Time to Completion Distribution

		Years to Completion								Total
		< 2	2	3	4	5	6	7	> 7	
Masters	**n**	17	35	30	10	3	0	0	0	95
	(%)	(17.9)	(36.8)	(31.6)	(10.5)	(3.2)	(0)	(0)	(0)	(78.5)
Doctorate	**n**	0	0	2	12	9	1	2	0	26
	(%)	(0)	(0)	(7.7)	(46.2)	(34.6)	(3.8)	(7.7)	(0)	(21.5)

Students and Supervisors Decision to Work Together

Students and Supervisors who had a choice in working together were asked to rate the importance of specific items in deciding to work together. Of the 43-student/supervisor dyads, 35 reported having had a choice in working with their supervisor. The distribution data for why the 35 students chose to work with their supervisors are presented in Table 9.0. The distribution data for why the 38 supervisors chose to work with their students are presented in Table 10.0.

A series of paired samples t-test were performed to examine if differences existed in why the student/supervisor dyads chose to work together. There were matched data on 32 student/supervisor dyads. Results of the t-tests are presented in Table 11.0.

Table 9.0 Student Importance Ratings of Characteristics in Choosing their Supervisor

		Very Unimportant (1)	Unimportant (2)	Neither Important nor Unimportant (3)	Important (4)	Very Important (5)	Mean	Standard Deviation
Common research interest	n (%)	1 (2.9)	3 (8.6)	2 (5.7)	17 (48.6)	12 (34.3)	4.03	1.01
Supervisor's professional reputation	n (%)	2 (5.7)	2 (5.7)	6 (17.1)	16 (45.7)	9 (25.7)	3.80	1.08
Supervisor's work habits	n (%)	2 (5.7)	4 (11.4)	8 (22.9)	13 (37.1)	8 (22.9)	3.60	1.14
Recommendation from another graduate student	n (%)	3 (8.6)	7 (20.0)	8 (22.9)	14 (40.0)	3 (8.6)	3.20	1.13
Recommendation from another professor	n (%)	3 (8.6)	10 (28.6)	11 (31.4)	6 (17.1)	5 (14.3)	3.00	1.19
Recommendation from graduate co-ordinator	n (%)	4 (11.4)	11 (31.4)	13 (37.1)	6 (17.1)	1 (2.9)	2.69	.99
Recruited by supervisor	n (%)	4 (11.4)	7 (5.8)	6 (17.1)	14 (40.0)	4 (11.4)	3.20	1.23
Personality	n (%)	0 (0)	0 (0)	2 (5.7)	9 (25.7)	24 (68.6)	4.63	.60

Table 10.0 Supervisor Importance Ratings of Characteristics in Deciding to Supervise their Student

		Very Unimportant (1)	Unimportant (2)	Neither Important nor Unimportant (3)	Important (4)	Very Important (5)	Mean	Standard Deviation
Common research interest	n (%)	0 (0)	1 (2.3)	3 (7.0)	19 (44.2)	15 (34.9)	4.26	0.72
Student's past research and academic experience	n (%)	0 (0)	3 (7.0)	4 (9.3)	25 (58.1)	6 (14.0)	3.89	0.76
Student's work habits	n (%)	0 (0)	1 (2.3)	5 (11.6)	19 (44.2)	13 (30.2)	4.16	0.75
Recommendation from another professor	n (%)	2 (4.7)	11 (25.6)	13 (30.2)	8 (18.6)	4 (9.3)	3.03	1.08
Recommendation from graduate co-ordinator	n (%)	5 (11.6)	17 (39.5)	11 (25.6)	5 (11.6)	0 (0)	2.42	0.89
Recruited by student	n (%)	2 (4.7)	5 (11.6)	12 (27.9)	12 (27.9)	7 (16.3)	3.45	1.11
Personality	n (%)	5 (11.6)	11 (25.6)	15 (34.9)	7 (16.3)	0 (0)	2.63	0.94

Table 11.0 Paired Samples Test of Difference between Students and Supervisors on Reasons for Working Together

Pair		n	Mean	Mean Difference	t	df	Sig. (2-tailed)
1	Common research interest with student	32	4.31	.22	1.269	31	.214
	Common research interest with supervisor		4.09				
2	Student's past research and academic experience (reputation)	32	3.88	.07	.329	31	.745
	Supervisor's professional reputation		3.81				
3	Student's work habits	32	4.13	.50	2.490	31	.018*
	Supervisor's work habits		3.63				
4	Recommendation from another professor (supervisor)	32	3.06	.18	.757	31	.455
	Recommendation from another professor (student)		2.88				
5	Recommendation from graduate coordinator (supervisor)	32	2.72	.41	1.684	31	.102
	Recommendation from graduate coordinator (student)		2.31				
6	Recruited by student	32	3.47	.28	.893	31	.379
	Recruited by supervisor		3.19				
7	Student's personality	32	2.59	-2.04	-10.522	31	.000**
	Supervisor's personality		4.63				

*p < .05 **p < .01

Discussion

Overall Satisfaction with the Supervisory Relationship

The result of the paired samples 2-tailed t-test indicated that supervisors were more satisfied (mean = 4.65) with the supervisory relationship than students (mean = 3.88), t (42) = -4.627, p = .000. Supervisor satisfaction appeared high. However this was not surprising, as it may have been skewed due to reluctance to admit anything other than satisfaction with the relationship given that supervision is a necessary task most professors undertake. Dissatisfaction could imply they are not performing an aspect of their job effectively.

To the knowledge of the researcher, there have been no studies examining dyad differences in overall satisfaction with supervision. Therefore, this particular result indicating that supervisors rated the relationship more favourably than students did makes a contribution to the literature on supervision.

Considering the importance of supervision in graduate education (Holdaway, 1991; Holdaway, Deblois & Winchester, 1994; Lovitts & Nelson, 2000; Seagram, Gould & Pyke, 1998) and the correlation between satisfaction with supervision and completion rates and withdrawal (Holdaway, Deblois & Winchester, 1994), the present result must not be ignored. Furthermore, it must be taken into account that the present study only surveyed students who had completed their studies, thus implying a successful outcome. The sample (all completers) coupled with their overall satisfaction with supervision leads to one of two possible conclusions. First, overall satisfaction may have little effect on completion, given the moderate mean satisfaction score and 100% completion rate for those surveyed. Second, and mutually exclusive, satisfaction may be positively correlated with completion. It might be that students who do not complete (i.e., withdrew) had a lower satisfaction. Certainly the comparison of

completers and non-completers would provide evidence to support one of the two preceding conclusions. This is an area recommended for future research.

Satisfaction with Supervisory and Satisfaction with Graduate Education

There was a significant positive correlation between overall satisfaction with the supervisory relationship and satisfaction with graduate education, indicating that the nature and quality of the relationship had a direct impact on satisfaction with graduate education. Hill, Acker and Black (1994), Moses (1992) and Powles (1988) all found that the perceived quality of graduate education was influenced by the perceived quality of the supervisory relationship. The results from this study support those findings.

Given that the quality of graduate education impacts the reputation of the university (Holdaway, 1996), which in turn impacts enrolment (Lovitts and Nelson, 2000; Milem, Berger & Dey, 2000), the present results indicating a strong relationship between the quality of the supervisory relationship and the quality of graduate education must not be ignored. The goals of graduate education are to prepare people to practice as independent professionals and to produce research that is linked to the intellectual, social and economic development of society (LaPidus, 1989). It seems logical that achieving these goals would depend on the quality of graduate education programs. Therefore, the correlation between satisfaction with graduate education and satisfaction with supervision indicates that the nature and quality of the supervisory relationship could also influence achieving the goals of graduate education.

Satisfaction with Supervision, Positive Role Modeling and Pursuing an Academic Career

It is interesting that significant relationships did not emerge between the decision to pursue an academic career and either satisfaction with the supervisory relationship or role modeling. Surprisingly, less than half of the students surveyed (44.6%) were, in fact, planning

an academic career. Unfortunately, information was not collected on the career pursuits of the other 55.4%. While these results support the concern for the future supply of new scholars in academia (Hill, Acker & Black, 1994; Statistics Canada, Feb. 2000) they also indicate that the supply has little to do with the supervisory relationship. Given that the quality of the supervisory relationship is highly correlated with the quality of graduate education, this further implies that the future supply has little to do with the quality of graduate education programs. Universities should examine other variables that might influence the decision to become an academic, such as the culture and environment of the university as well as student mobility. It could be that industry provides more lucrative employee packages to new PhD graduates. Or, perhaps, students are not as mobile as they once were and with the current university policies on hiring internally, students are forced to go to industry for employment. These possibilities should be examined if universities wish to increase the supply of new scholars in academia.

There was, however, a significant positive correlation between overall satisfaction with the supervisory relationship and role modeling. Morgan (1993) states that role modeling often occurs in academic settings in the areas of research and instruction. Modeling involves a more advanced person engaging in the desired behaviors, so that a less experienced person can learn the behaviours in a similar fashion (Morgan, 1993). Role modeling has previously been found to be an important characteristic in the student/supervisor relationship (Cesa and Fraser, 1989; Morgan, 1993). The present results support this result, indicating that positive role modeling is a characteristic of effective supervision.

Demographics and Satisfaction with Supervision and Graduate Education

Gender

In terms of overall satisfaction with the supervisory relationship, there were no significant differences between male students and female students perceptions (means = 3.63 and 3.62 respectively). This finding contradicts the findings by Worthington and Stern (1985), Hite (1985) and Powles (1993) who found that in general, male students perceived better relationships with their supervisors than female student's did. Considering the dates of the above studies, it is apparent that the gap in satisfaction between males and females has narrowed in the past five or more years. Overall, the satisfaction scores for both groups fell below 'satisfied' (4.00/5.00), leading to a conclusion that neither group was very satisfied with the relationship in general.

It is particularly interesting that in terms of supervisor gender, there were no significant differences found with satisfaction. Previous studies have found that male supervisors often perceive better relationships with students and female supervisors may have higher standards for what constitutes a good relationship (Worthington & Stern, 1985). However, the present results did not support this previous funding.

Age

It has been argued that younger students are generally more dissatisfied with the supervisory relationship than older students are (Powles, 1988). However, the findings in this study do not support this. It is recommended that a larger sample size in conjunction with more specific descriptors of supervision be used in a future study to further examine student age and satisfaction with the supervisory relationship.

In terms of Supervisor age, there were no significant differences in satisfaction. This finding contradicts the findings of Yerushalmi (1993) who found that middle-age supervisors

were often more critical and less satisfied with supervision. Yerushalmi stated that middle-age supervisors often felt threatened in the presence of younger students aspiring for their jobs. The present study does not provide support for this conclusion. Instead, it appeared that supervisors of all ages were equally satisfied with the relationship.

Faculty

There were statistically significant differences in student satisfaction with supervision as a function of faculty. It appears that overall, students in Nursing and Medical Science were the most satisfied with supervision and their graduate education and students in Communication/Culture and Science were the least satisfied. It should be noted however that the results found in this study reflect the perceptions of only a small number of the students registered in each Faculty. For example, only two students from Communication/Culture participated in the study making it difficult to generalize findings for that Faculty. Faculties with larger sample sizes (e.g., 20 students from Science) were comprised of students from many departments (e.g., Biology, Chemistry, Physics, Geology/Geophysics) again making it difficult to make strong conclusions for the entire Faculty.

As mentioned in the Literature Review, there did not appear to be any research examining the differences in supervision and satisfaction with supervision across all Faculties in graduate education prior to this study. There is only one study by Seagram, Gould and Pyke (1998) that examined differences in satisfaction between students in Humanities, Social Sciences and Science. They found that students in Social Sciences reported higher levels of overall satisfaction with the supervisory relationship than students in Science or Humanities did. Although the present study also showed that students in Social Science were more satisfied with

the supervisory relationship (mean = 4.00) than students in Science (mean = 3.35) and Humanities (mean = 3.86) were, the differences were not significant.

For supervisors, no significant differences were found in satisfaction as a function of Faculty, implying that in general, supervisor's perceptions of supervision are consistent across all Faculties.

Student Time to Completion

Satisfaction with supervision was not found to influence time to completion for students. This is a very interesting finding considering the concern about completion rates among university administrators (Holdaway, Deblois & Winchester, 1994; Canadian Association for Graduate Studies, 1992). Given that previous studies have linked the quality of supervision to completion rates (Holdaway, 1991; Holdaway, Deblois & Winchester, 1994), this finding is surprising.

Students and Supervisors Decision to Work Together

Prior to this study, reasons for choosing a supervisor or deciding to supervise a student had not been examined. This section therefore provides valuable information about the student-supervisor relationship, which has not been captured elsewhere. Very interesting results emerged as to the reasons why students and supervisors decided to work together.

Results indicated that for supervisors, the two most important reasons for supervising a student were common research interest first and the student's work habits second. For students, the two most important reasons were personality first and common research interest second. Both students and supervisors agreed on the common research interest with no significant differences in their scores. However significant mean differences existed with the other two reasons (work habits and personality). It is not surprising that supervisors would choose work

habits given the emphasis placed on student competence, motivation and attitude in previous sections of this study. All of these would be reflected in the student's work habits. Common research interest was also not surprising. It seems logical that students would examine the research interest of potential supervisors during the selection process. Given that graduate students increase research productivity (Milem, Berger & Dey, 2000) it also is logical that supervisors would select students based on common research interests.

The surprising difference here lies with personality. Students' mean score on the importance of personality was 4.63/5.00 indicating that overall supervisor personality was very important. On the other hand, supervisors had a mean score of 2.59/5.00 on the importance scale, indicating that personality was not important in the decision to work together. This finding adds significant information to what students perceived as important in the supervisory relationship. Students first choose supervisors based on personality. However, once in the relationship, their needs shifted to structure and expertise. Supporting the importance of personality in the relationship are the results from the question on why students changed supervisors during their studies. Almost 50% of the students who changed supervisors did so because of a personality conflict. This was followed by change in research interest (18.5%). Given these results, personality should be examined in further detail as a method for matching students and supervisors in graduate education.

With respect to the other reasons for choosing to work together, both students and supervisors agreed that professional reputation was somewhat important, recommendations from other people (professors, students and graduate co-ordinators) were not important, and recruiting was neither important nor unimportant.

The results of this study are encouraging in describing the quality and nature of the supervisory relationship in graduate education. However, as with all studies, there are limitations. Several limitations may lie with the sample itself. . First, only students who had successfully completed their graduate degree participated. As a result, the data may have been biased in that students who were enrolled and students who had completed may have had different perceptions of the relationship than students who had dropped out. With respect to supervisors, the data may also have been biased given that the supervisors who participated were generally satisfied with the supervisory relationship. It would have been beneficial to examine the perceptions of supervisors who had not been satisfied.

An additional limitation with the sample is that although the response rate was good (40%) some Faculties were underrepresented leading to an unequal distribution of participants in each area. For example, only two students participated from each of the Faculties of Communication/Culture and Management making it impossible to generalize the findings to all students in those Faculties. In addition, certain Faculties were not represented at all, such as Fine Arts and Law. Students in those Faculties may have had different perceptions and therefore changed the results of the entire study. The same limitation exists with the supervisor sample. Again, while the response was good (35.5%), some faculties were not represented, hence excluding valuable perceptions from the study.

The retrospective nature of the study presented a limitation. Participants were asked to respond to questions about a relationship that may have occurred as much as six months in the past. Although this is not a long time, it may have had an effect on the perceptions of participants.

The use of a survey also presents a limitation. Participants in the study may have idealized the nature of their relationship. That is, when asked on a 5-point Likert scale to interpret satisfaction, many may have given responses that reflected positive relationships. This may be particularly true of supervisors who tended to be more positive than students did. As a result, it is difficult to define successful supervision on the basis of the data available. Perhaps in-depth interviews with participants would have resulted in different results.

Finally, the lack of a role modeling subscale was a limitation in this study. Given the importance of role modeling in graduate supervision that emerged from this study, it would have been beneficial to measure role modeling with more than a single question.

In conclusion, the present study contributes to our understanding of the supervisory relationship in graduate education. However, much is to be uncovered and the topic deserves further study.

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